REMARKS

Claims 1, 3-33 and 40-44 were examined in the Action dated March 27, 2002. (Claims 2 and 34-39 had been previously canceled.) Claims 1, 15-17, 23, 32 and 33 are amended herein, while claims 40-43 are canceled, without prejudice, and claim 45 has been added herein. Thus, the following claims are now in the case: 1, 3-33 and 44-45. Of these, claims 1 and 33 are independent apparatus claims, while claims 28, 30, 31 and 32 are independent method claims. The cancellation of apparatus claims 40-42 is done merely to simplify the issues presented and is done without prejudice.

Claims 1 and 33 have been amended to state that the pin is positioned in the device to reduce thermal gradients across the sample block.

Claims 15-17 have been amended merely to clarify what was already being claimed.

Claim 23 was amended to insert the term --carrier-- which had been inadvertently omitted previously, as will be clear from a review of the claim.

Claim 32 was amended to correct the term --thermoelectric-- and to include certain punctuation to better recite what is being claimed.

New claim 45 depends from claim 1 and is similar to claim 44, which depends from claim 33.

Claim 43 was canceled as being unnecessary in view of the amendment made to claim 33.

Clearly, the amendments being made herein are all supported by the application as originally filed and no new matter has been added.

Claims 1, 3-8, 14-29 and 31-44 were rejected in the Action dated March 27, 2002 as allegedly being anticipated by Atwood et al. (U.S. Pat. No. 5,475,610). The rejection is respectfully traversed.

Claims 1 and 33, the independent apparatus claims from which claims 3-27 and 44-45 depend, directly or indirectly, have been amended to define that the pin, which provides a thermal path between the sample block and the heatsink of the apparatus, is positioned to reduce

thermal gradients across the sample block. As is explained, for example, on page 8 of the instant application, pin 24 acts as a "heat leak" to reduce the amount of heat in the sample block in the vicinity of the pin. This is desirable because the sample block is rectangular in configuration and tends to lose heat more readily in the corners. Thus, the corners of the sample bock would normally tend to cool more rapidly than the inner portions closer to the center of the block. Use of the pin in this higher temperature region of the block allows a "heat leak" to the heatsink, thus reducing the temperature gradient across the sample block and providing a more uniform temperature profile across the block.

The Atwood '610 patent neither discloses nor suggests this limitation. The rejection seeks to use the bolts referred to in the '610 patent in Fig. 9, col. 9, lines 46-52, and col. 12, lines 6-27, col. 16, lines 35-51 as support for the rejection. Fig. 9 of the '610 patent "is a cross-sectional, elevation view of the sample block structure after assembly with the three-zone film heater and block support." ('610 patent, col. 7, lines 16-18). The Action refers to column 9, lines 46-52, which refers to central processing unit 20 and heated cover 14. Thus, there is no apparent support there for the instant rejection. Nor is there support for the rejection at col. 12, lines 6-27 of the '610 patent. This section refers to CPU 20, temperature sensors 21, 56 and 61. There are no pins or bolts referred to in either portion of the patent.

Col. 16, lines 35-51, refers to "steel bolts" extending through a support bracket into threaded holes 124-127. However, Fig. 9 does not show elements 124-127. Rather, Fig. 2 shows "holes" 124-127 and these "holes" are clearly along the outer periphery of the sample block. The "bolts" referred to in the rejection must be inserted along the plane of the block, perpendicularly to the sample wells, from the outside of the sample block. As shown, in Fig. 2, the bolts present in 124-127 would not even reach the outermost sample wells. Clearly, then, the '610 patent does not disclose or suggest at least the pin feature of the instant claims.

The pin feature calls for one end of the pin to be in close contact with the sample block and the other end to be in close contact with the heatsink (see application Fig. 1, elements 22 and 24). As illustrated, pin 24 is under plate 22 having sample wells 20. The pin, according to the claim language, is "positioned to reduce thermal gradients across the sample block" since it acts

as a "heat leak" in an area which is higher in temperature than the edge areas of the sample block. Clearly, then, this feature is nowhere described or suggested by the Atwood '610 reference.

Nor does Horn et al. (U.S. Pat. No. 5,834,828) disclose or suggest this feature, or many other features of the instant claims.

It is respectfully submitted that independent apparatus claims 1 and 33 are clearly patentable over Atwood et al. and Horn et al., whether taken individually or together and would not have been obvious to one of ordinary skill in the art at the time the instant invention was made over those references.

Claims dependent on claims 1 and 33 are likewise allowable for at least the same reasons, namely, claims 3-27 and 44-45. The instant rejection has been overcome and should be withdrawn, with respect to these claims.

Method claims 28, 29, 31 and 32 were also rejected as allegedly being anticipated by Atwood et al. '610. This rejection is respectfully traversed.

First, the power amplifier in the '610 patent is clearly not bipolar and does not apply an AC voltage. Applying an AC voltage and measuring the AC voltage are called for by claim 28 and its dependent claim 29. Clearly these features are not met and the claims cannot be anticipated by the '610 patent. The text at col. 18, lines 1-3 of the '610 patent clearly indicates that the voltage is rectified to eliminate the negative half cycle. Only positive half cycles remain and there is no reversal of polarity of the voltage applied to the heater.

Second, because there is no AC voltage applied to the heater in the '610 patent, there is no reason for sensing AC voltage and AC current, or for calculating an AC resistance. Thus, the rejection is overcome with regard to claims 28 and 29.

The remaining rejections (claims 31 and 32) are also traversed.

Claim 31 includes the feature: "calculating temperature of said mixture as a function of said temperature of said sample block...and said thermal capacitance of said vial between said mixture and said cover."

The cited Atwood et al. '610 patent does not refer to the thermal resistance of air in parallel with the vial, or the thermal capacitance of the vial between the mixture and the cover. The '610 patent appears to be completely silent with respect to these aspects of the claim and therefore cannot anticipate it.

Claim 32 calls for the memory device in which power calibration information is stored to be located on the block-heater assembly itself. This arrangement provides the unique advantage of permitting the block assembly to be moved from one instrument to another and still perform as specified because the calibration information and the assembly move together as a unit. The '610 patent neither discloses nor suggests at least this feature. In the '610 patent, calibration information is stored in the main apparatus itself. Thus, at least this aspect of the claim is neither disclosed nor suggested by the reference.

Nor would the method claims have been obvious to one of ordinary skill in the art over the '610 patent or the '828 patent either taken alone or in combination, at the time the invention was made.

The rejections of still pending claims 1, 3-8, 14-29, 31-33 and 41-44 are overcome and should be withdrawn in light of the amendments and arguments presented.

Claims 9-13 and 30 were rejected in the Action dated March 27, 2002 as allegedly being obvious over Atwood et al. '610 in view of Horn et al. '828. The rejection is respectfully traversed.

As has been noted above regarding the rejections made under Section 102(b) over Atwood et al., claim 1, from which apparatus claims 9-13 depend either directly or indirectly, is allowable over Atwood et al. '610. The arguments and remarks made above are hereby incorporated here by reference. Horn et al. '828 neither discloses nor suggests any matter which would overcome the indicated shortcomings of Atwood et al. It is urged, therefore, that claims 9-13 would not have been obvious to one of ordinary skill in the art over Atwood et al. '610 and Horn et al. '828, whether taken individually or in combination, at the time the claimed invention was made.

Method claim 30 is directed to a method for achieving linear temperature transitions and calls for determining electrical resistance of the thermoelectric device as a function of temperature, determining the Seebeck coefficient of the thermoelectric device as a function of temperature and determining conductance of the thermoelectric device as a function of temperature, etc., and then calculating a current value to achieve the desired heat flow and other parameters as a function of temperature.

It is not seen that the cited portions of Atwood et al. '610 or Horn et al. '828 suggest taking measurements as a function of temperature. It is urged, therefore, that claim 30 would not have been obvious over Atwood et al. '610 either alone or in combination with Horn et al. '828 to one of ordinary skill in the art at the time the invention was made.

All pending claims are urged to be allowable.

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Respectfully submitted,

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